REMARKS

Claims 1-13 remain present in this application.

Claims 1-13 stand rejected under 35 USC 103 as being unpatentable over Marcuse et al., U.S. Patent 6,385,383, in view of He, U.S. Publication 2002/0136525. This rejection is respectfully traversed.

It is respectfully submitted that the present application differs from Marcuse et al. in a variety of ways. For example, the waveguide of Marcuse et al. is direct, whereas the waveguide of the present application is embedded and curved, such that the light attenuation affect is increased. Also, the waveguide of Marcuse et al. is coated by four kinds of polymer material, and the core and light attenuation section are manufactured separated and covered by a cladding. The manufacture process of Marcuse et al. therefore needs a plurality of masks and precision alignment is very complex and difficult.

The index of refraction of the polymer cladding of Marcuse et al. is manipulated by changing its temperature. However, this interferes with the incident light and affects light reflection.

Further, appliance of the electrodes of Marcuse et al. differs from the present application, in that the heater or cooler placed adjacent to the polymer cladding of Marcuse et al. is difficult to manufacture.

The waveguide of the present application requires only a single material and has the same technical effect. The waveguide of the present application is easy to manufacture and has superior performance. However, in Marcuse et al., the range of temperature to change the index

of refraction of the polymer cladding is about 200°C, compared to the 35°C required in the present application.

The differences between the present application and Marcuse et al. are summarized in the following table:

	The present application	Marcuse et al.
Structure	Curved waveguide, embedded type	Direct waveguide having a cladding, ridge type
Light Attenuation Method	Change the index of reflection and the curved type of light attenuation mechanism. Double attenuation mechanism increases the attenuation caused by the temperature variation.	Change the index of reflection. The light attenuation is controlled by one parameter, so the attenuation magnitude is small. A higher temperature is needed for the same attenuation magnitude, and thus the temperature may be over the environment temperature.
Temperature Variation	ΔT=35°, which is within the environment test temperature, and the temperature variation is easy to be controlled because only polymer is used.	ΔT = 200°. The temperature ranges from -20° to 180°. The polymer material cannot endure such high temperatures. The lifespan of the cover is reduced because of violent temperature variation, which is not easy to control. Further, the temperature variation coefficients of the polymer materials are not the same; therefore, light attenuation is very difficult to control. This technology cannot pass the environment test temperature.
Material	Only one polymer material	Four kinds of polymer material, requiring complex and difficult manufacturing.
Process	Requires only one mask, easy to manufacture with low costs.	A plurality of masks are required, which are difficult to manufacture.

The waveguide of the present application uses a glass cladding and a polymer core, and attenuation is achieved by assistance of the curved waveguide and variation of the index of the reflection. Also, Marcuse et al. uses polymer materials, while He uses InP, which is very expensive. The present application uses glass and one polymer, and therefore has the advantages of inexpensive, simply manufacture. Further, the attenuation method in He is executed by imposing an electrical field on the electrode, whereas the attenuation method of the present application is executed by changing temperature. Therefore, the reference to He fails to overcome the deficiencies of the primary reference to Marcuse et al.

The optical attenuator and method of independent claims 1 and 10 of the present application, as well as their dependent claims, is neither taught nor suggested by the prior art utilized by the Examiner. Accordingly, reconsideration and withdrawal of the 35 USC 103 rejection are respectfully requested.

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

Because the additional prior art cited by the Examiner has been included merely to show the state of the prior art and has not been utilized to reject the claims, no further comments concerning these documents are considered necessary at this time.

In the event the Examiner does not consider this application to be in condition for allowance, it is respectfully requested that this response be entered for the purposes of Appeal. This response should overcome the current grounds of rejection and therefore simplify the issues for Appeal. Nonetheless, it should be unnecessary to proceed to Appeal because the instant application should now be in condition for allowance.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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